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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/596,613	06/19/2006	Niclas Wiberg	P18737-US1	8421
27045	7590	01/14/2011	EXAMINER	
ERICSSON INC. 6300 LEGACY DRIVE M/S EVR 1-C-11 PLANO, TX 75024			HAIDER, SYED	
			ART UNIT	PAPER NUMBER
			2611	
			NOTIFICATION DATE	DELIVERY MODE
			01/14/2011	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/596,613	<b>Applicant(s)</b> WIBERG ET AL.	
	<b>Examiner</b> SYED HAIDER	<b>Art Unit</b> 2611	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 26-39, 46 and 47 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 26-39, 46 and 47 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. This action is in response to the Amendment filed on 11/01/2010. Claims 26-39 and 46-47, are pending.

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 26-39 and 46-47, have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 26-29, 31-33, and 35-39, rejected under 35 U.S.C. 103(a) as being unpatentable over Harrison (US Patent 6,154,485) and further in view of Minila (US PG PUB 2004/0044506 A1).

3. As per claim 26, Harrison discloses a method in a receiver unit to receive communication signals from a transmitter unit via a multi-path channel, said method comprising the steps of:  
estimating parameters of a channel filter function of said channel (Harrison, Fig. 1:54,

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Column 3, lines 37-40) from said received communication signals from the transmitter unit (Harrison, Fig. 1:52:56);

composing a channel measurement message to be transmitted to the transmitter unit of a portion including said parameter representations (Harrison, Fig. 1:149, Column 4, lines 28-38) and a portion indicating the manner of representing said parameters (Harrison, Fig. 1:149).

Harrison does not explicitly disclose sub-dividing the channel filter function into two or more parts, a function of which representing an approximation of the estimated full channel filter function;

representing the complex parameters of at least a selection of said parts of the channel filter function as actual parameter values, or as incremental values indicating the difference to a reference value; and,

Meinila discloses sub-dividing the channel filter function into two or more parts (Meinila, Fig. 4A and Fig. 5, which shows channel impulse response is being divided into sections), a function of which representing an approximation of the estimated full channel filter function (Meinila, Fig. 4A and Fig. 5);

representing the complex parameters of at least a selection of said parts of the channel filter function as actual parameter values, or as incremental values indicating the difference to a reference value (Meinila, paragraph 24); and,

At the time of the invention it would have been obvious to one of ordinary skill in the art to modify Harrison teachings by dividing the channel filter function into two parts, as taught by Meinila.

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The motivation would be to provide an improved method of simulating a radio channel and a channel simulator, as taught by Meinila.

4. As per claim 27, Harrison in view of Meinila further discloses the method according to claim 26, wherein said function performs a summing of the sub-divided parts of the channel filter function (Meinila, Fig. 4:408).

5. As per claim 28, Harrison in view of Meinila further discloses the method according to claim 26, wherein the sub-divided parts of the channel filter function comprise channel information of a ranked degree of significance (Meinila, Fig. 5, paragraph 39).

6. As per claim 29, Harrison in view of Meinila further discloses the method according to claim 26, wherein the channel filter function is represented as a channel impulse response in the time-domain (Meinila, paragraph 31).

7. As per claim 31, Harrison in view of Meinila further discloses the method according to claim 29, wherein the primary sub-divided filter function includes a representation of one or more of the most significant channel components (Meinila, Fig. 4A, and paragraph 34).

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8. As per claim 32, Harrison in view of Meinila further discloses the method according to claim 31, wherein the most significant channel component is the component having the shortest delay (Meinila, paragraph 39).

9. As per claim 33, Harrison in view of Meinila further discloses the method according to claim 26, wherein the channel filter function is represented as a channel frequency response in the frequency- domain (Meinila, paragraph 31).

10. As per claim 35, Harrison in view of Meinila further discloses the method according to claim 26, wherein the complex parameters of said parts of the channel filter function are represented by their actual values in case of a significant change compared to a previous reference value (Meinila, paragraph 24).

11. As per claim 36, Harrison in view of Meinila further discloses the method according to claim 35, wherein the reference value corresponds to a previous channel parameter representation (Meinila, paragraph 34).

12. As per claim 37, Harrison in view of Meinila further discloses the method according to claim 35, wherein the reference value corresponds to a modelled estimate of the channel filter function (Meinila, paragraph 34).

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13. As per claim 38, Harrison in view of Meinila further discloses the method according to claim 37, wherein the modelled estimate is a interpolation of the channel filter function from the complex parameters of the channel filter function (Meinila, paragraph 34).

14. As per claim 39, Harrison in view of Meinila further discloses the method according to claim 37, wherein said modelled estimate of the channel filter function has been received by the transmitter unit (Harrison, Fig. 1:52).

**15. Claims 30, and 34, are rejected under 35 U.S.C. 103(a) as being unpatentable over Harrison (US Patent 6,154,485) and further in view of Minila (US PGPUB 2004/0044506 A1) and further in view of Cox (US PGPUB 2003/0058929 A1).**

16. As per claim 30, Harrison in view of Meinila further discloses the method according to claim 29, wherein the complex parameters of the channel impulse response are reproduced as phase values (Meinila, paragraph 24).

Harrison in view of Meinila does not explicitly disclose amplitude values.

Cox discloses wherein the complex parameters of the channel impulse response are reproduced as amplitude and phase values (Cox, paragraph 91).

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At the time of the invention it would have been obvious to one of ordinary skill in the art to modify Harrison in view of Meinila teachings by providing amplitude values to the system, as taught by Cox.

The motivation would be to provide a communication receiver which facilitates power savings and permits enhanced performance when necessary, as taught by Cox.

17. As per claim 34, Harrison in view of Meinila further discloses the method according to claim 33, wherein a complex parameter of the channel frequency response is reproduced optionally by an additional phase value (Meinila, paragraph 24). Harrison in view of Meinila does not explicitly disclose reproduced at least as an amplitude value (Cox, paragraph 91).

At the time of the invention it would have been obvious to one of ordinary skill in the art to modify Harrison in view of Meinila teachings by providing amplitude values to the system; as taught by Cox.

The motivation would be to provide a communication receiver which facilitates power savings and permits enhanced performance when necessary, as taught by Cox.

**18. Claims 46-47, are rejected under 35 U.S.C. 103(a) as being unpatentable over Harrison (US Patent 6,154,485) and further in view of Minila (US PG PUB 2004/0044506 A1) and further in view of Haartsen (US PG PUB 2002/0131486).**



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19. As per claim 46, Harrison further discloses an apparatus for processing communication signals received via a multipath channel, comprising:

means for estimating parameters of a channel filter function of said channel (Harrison, Fig. 1:56, Column 3, lines 37-40) from said received communication signals from the transmitter unit (Harrison, Fig. 1:52:56);

means for composing a channel measurement message to be transmitted to the transmitter unit including said set of parameter representations (Harrison, Fig. 1:149, Column 4, lines 28-38) ,

Harrison does not explicitly disclose means for sub-dividing the channel filter function into two or more parts, a function of which representing the estimated full channel filter function;

means for representing the complex parameters of at least a selection of the sub-divided channel filter function as actual parameter values, or as incremental values indicating the difference to a reference value; and,

Meinila discloses means for sub-dividing the channel filter function into two or more parts (Meinila, Fig. 4A and Fig. 5, which shows channel impulse response is being divided into sections), a function of which representing the estimated full channel filter function (Meinila, Fig. 4A and Fig. 5);

means for representing the complex parameters of at least a selection of the sub-divided channel filter function as actual parameter values, or as incremental values indicating the difference to a reference value (Meinila, paragraph 34); and,

At the time of the invention it would have been obvious to one of ordinary skill in the art

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to modify Harrison teachings by dividing the channel filter function into two parts, as taught by Meinila.

The motivation would be to provide an improved method of simulating a radio channel and a channel simulator, as taught by Meinila.

Harrison in view of Meinila does not explicitly disclose a header field indicating the manner of representing said parameters.

Haartsen discloses a header field indicating the manner of representing said parameters (Haartsen, Fig. 3, paragraph 36).

At the time of the invention it would have been obvious to one of ordinary skill in the art to modify Harrison in view of Meinila teachings by providing a header field indicating the manner of representing the parameters, as taught by Haartsen.

The motivation would be to provide a radio receiver in which received training sequences are positioned, and reference training sequences are selected, to accurately reflect the modulation scheme applied to the payload, even where dynamic link adaptation is applied, as taught by Haartsen.

20. As per claim 47, Harrison in view of Meinila in view of Haartsen further discloses the apparatus according to claim 46, which is integrated in a mobile user equipment (Harrison, Fig. 1).

21. **Examiner's note:** Examiner has cited particular paragraphs in the references as applied to the claims above for the convenience of the applicant. Although the specified

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citations are representative of the teachings of the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested to the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art as disclosed by the Examiner.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SYED HAIDER whose telephone number is (571)270-5169. The examiner can normally be reached on Monday thru Friday 8:00 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Examiner, Art Unit 2611

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